

REMARKS

Claims 1-44, 46-50 and 52-63 are pending in the present application. Claims 45 and 51 have previously been canceled. Claims 1, 10, 17, 24, 30, 36 and 43 are independent.

Summary of Examiner Interview

Applicants appreciate the courtesies extended to their representative, Michael R. Cammarata, during the interview conducted September 22, 2005. During this interview, the independent claims were discussed in relation to the Karighattem Patent. The theme of these arguments was that Karighattem fails to disclose or suggest the virtual addressing as variously recited in the claims. Examiner David Eng expressed a desire to have this virtual addressing concept more definitely recited in the claims. Particularly, Examiner Eng suggested that the use of the virtual addressing technique could be better expressed in the claims and that, if this was done, that the claims may define over the art of record. However, an update search would need to be conducted and further examination performed before a final decision on patentability could be reached.

Consistent with the discussions during the interview, each of the independent claims has been amended to more definitely recite the use of virtual addressing. Further arguments follow.

Art Rejections

Claims 1-42 are rejected under 35 USC § 102(a) as being anticipated by Karighattem (USP 6,594,776). Claims 43-63 are rejected under 35 USC § 103(a) as being unpatentable over

Karighattem. These rejections, insofar as they pertain to the presently pending claims, are traversed.

As mentioned above, the claims have been amended to more definitely recite the use of virtual addressing techniques that are clearly distinct from the applied art. For example, the independent claims variously refer to “dynamically mapping” the virtual address to create an updated mapping. This updated mapping is then utilized to communicate.

In contrast, Karighattem clearly utilizes a static addressing technique. Such static addressing is resource intensive, particularly when an address needs to be changed, such as upon device failure.

In Karighattem, there is provided a network client server computer system 110, as shown in Figure 2, having a redundant network interface card (NIC). Upon failure of the primary NIC, the static addresses utilized by the system are changed. More specifically, in the normal operating condition, Ethernet switch A initially stores the media access control (MAC) address of the primary NIC in its address table. This MAC address of the primary NIC is a static address which is stored at the Ethernet switch A. When the primary NIC malfunctions or fails, the secondary NIC will take over by having the Ethernet switch A delete the MAC address of the server PC from its address table. Recall that upon initialization, both the primary and secondary NICs are programmed with a single common MAC address that is utilized to identify the server PC 114 (see column 3, lines 16-22). Upon failure of the primary NIC, the Ethernet switch A deletes the MAC address of the server PC from its address table. The result is that the secondary NIC will send an LLC broadcast packet to Ethernet switch B. This causes the Ethernet switch B

to add the server PC MAC address to its address table, thereby reconfiguring the network. The result is that when the client PC tries to send a packet to the server PC, the primary Ethernet switch A will no longer be able to communicate with the server PC because the MAC address of the server PC will no longer exist in its table. This causes the primary switch A to flood all ports such that the packet sent from the client PC may then be received by the backup Ethernet switch B. Since the backup Ethernet switch B now also has the MAC address of the server PC in its address table, the packet will be forwarded by the backup Ethernet switch B to the server PC. For further details, please see column 3, lines 35-57, as well as the flowchart of Figure 3.

One non-limiting but illustrative example of virtual address to static address mapping according to the invention is as follows. The virtual address may comprise an internet protocol (IP) address while the static addresses may each be separate media access control (MAC) addresses. Thus, the virtual IP address is permitted to float between two distinct MAC addresses. When a failure occurs, the mapping of the virtual address to one of the static addresses may be changed in a simple and efficient manner.

The amended claims further define over Karighattem's static addressing technique. As recited in amended independent claim 1, the management mechanism, upon detecting a malfunction, dynamically maps the mechanism-based virtual address to create an updated mapping by associating the mechanism-based virtual address with a second static address rather than a first static address. This updated mapping is then utilized by other mechanisms in the network to communicate with said communication mechanism. Such a virtual addressing

concept, particularly how it is performed and utilized in the claims, is simply absent and not suggested by Karighattem.

In contrast, Karighattem merely changes the static NIC (network interface card) static MAC address. If one NIC fails, then the server PC simply updates the static MAC address such that it addresses the non-failed NIC instead of the failed NIC. This is not the same as and does not suggest the virtual addressing utilized by the invention. Such virtual addressing provides an efficient mapping between a plurality of static address and a single virtual address. The management mechanism need only refer to and keep track of a single virtual address. In other words, the management mechanism may consistently utilize a single virtual address when communicating with other network elements. By dynamically mapping the virtual address to one of several static addresses, one can adaptively change how the communication mechanism or methods actually communicate. Simply by dynamically mapping the virtual address one can completely change how the communication messages are routed. Such a dynamic mapping of virtual address to static address is a concept completely absent from Karighattem. Even more specifically, Karighattem fails to disclose or suggest a mechanism that uses the dynamically mapped virtual address (updated mapping) during communications such that other mechanisms in the communication network send communications having the mechanism-based virtual address associated therewith to said communication mechanism via the second network interface rather than the first network interface.

In terms of claim 10, Karighattem also fails to disclose or suggest the features cited therein. Claim 10 has features similar to those of claim 1, but also couples the network interfaces

to switches. As recited, the first network interface is coupled to a first network switch and the second network interface is coupled to a second network switch. Patentable features of claim 10 include the virtual address that is utilized. Specifically, the mechanism-based virtual address is dynamically mapped by the management mechanism upon detecting a malfunction. This dynamic mapping of the mechanism-based virtual address creates an updated mapping. This updated mapping (via dynamic mapping of the virtual address) is utilized by other mechanisms in the network to send communications. Thus, the claims recite more than a mere disembodied concept of virtual addressing, but also utilize this virtual addressing concept and technique to communicate in the network. Such use of a virtual address is simply not found or suggested by Karighattem.

Likewise, the computer readable medium of claim 24 recites patentable features. Specifically, the computer readable medium includes instructions for causing one or more processors of the network to, upon detecting malfunctions, dynamically map the mechanism-based virtual address to create an updated mapping. This concept is absent from Karighattem. Also absent is the concept of instructions for causing the other mechanisms in the network to use the updated mapping (created by the dynamic map of the virtual address) to send communications having the mechanism-based virtual addresses associated therewith to the communication mechanism via the second network interface rather than the first network interface. This is a dynamic remapping of a virtual address, which is simply not disclosed or suggested by Karighattem.

Even further, the features of amended independent claim 30 are also distinct from Karighattem. For example, the computer readable medium recited therein includes instructions for causing one or more processors to, upon detecting malfunction of the first network switch, dynamically map the mechanism-based virtual address to create an updated mapping. This dynamically mapping of the virtual address is completely absent by Karighattem. Further features also not found in Karighattem include the instructions for causing the other mechanisms in the network to use the updated mapping to communicate with the communication mechanism or the instructions for causing the other mechanisms to send communications having the mechanism-based virtual address associated therewith to the communication mechanism via the second network interface rather than first network interface. This remapping of the communication routes utilizing a dynamic mapping of the virtual address is simply absent from the applied art of Karighattem.

Still further, Karighattem fails to disclose or suggest the communication system of independent claim 43. Particularly, the language wherein the first management mechanism dynamically maps the first mechanism-based virtual address to either the first static address or the second static address, is a concept completely absent from Karighattem. As mentioned above, Karighattem merely changes the static address and does not permit a virtual address to float between or otherwise be dynamically mapped between first and second static addresses. In Karighattem there is simply a change in the static address.

There is no mapping or relationship between a virtual address and a static address as is now recited in the claims. Also absent from Karighattem is the further language of claim 43,

wherein the second communication mechanism uses the updated mapping to communicate with the first communication mechanism. Although Karighattem may perform communications, they are not according to a dynamic mapping utilizing a virtual address as claimed.

In view of the above amendments and arguments, taken alone or in combination, applicants respectfully request reconsideration and withdrawal of the art rejections based on Karighattem. Furthermore, the dependent claims should be considered allowable at least due to their dependencies upon the respective independent claims that are argued above in detail.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

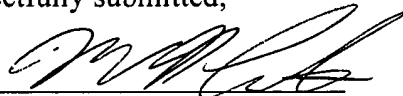
Conclusion

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact the undersigned at (703) 205-8000 to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

By 

Michael R. Cammarata

Registration No.: 39,491

BIRCH, STEWART, KOLASCH & BIRCH, LLP

8110 Gatehouse Rd

Suite 100 East

P.O. Box 747

Falls Church, Virginia 22040-0747

(703) 205-8000

Attorney for Applicant

MRC/jm